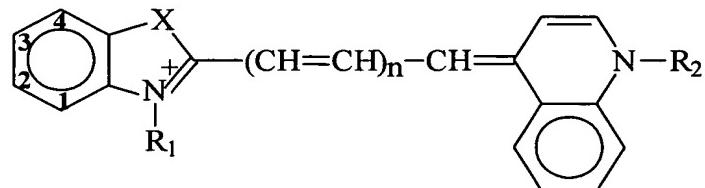


ABSTRACT

5 The invention provides an asymmetric cyanine dye compound having the structure



including substituted forms thereof, wherein, at least one of R_1 and R_2 is linking group, X is O, S, or Se, and n ranges from 0 to 2. The invention further provides reporter-quencher dye pairs comprising the asymmetric cyanine dyes, dye-labelled polynucleotides
10 incorporating the asymmetric cyanine dyes, and hybridization detection methods utilizing the dye-labelled polynucleotides.